Domain Team Operations Manual
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Introduction to the Domain Team Operations Manual

As an active participant in the enterprise-wide architecture program, you are aware that an Enterprise-wide Technical Architecture (EWTA) is never completed. For that reason, the Department of Information Technology (DOIT) felt it necessary to create a guidebook to be utilized as a reference when progressing through the processes involved in maintaining the EWTA. This document will guide domain team leaders, team members and subcommittee members through the various technical and governance processes that have been defined to make EWTA a self-sustaining program.

Background and Goals

DOIT embarked on a project in April 2000 to create a statewide technical architecture to provide the framework for making strategic technology investment decisions on a cost effective, enterprise basis. These IT decisions must also meet the diverse business needs of the agencies in the executive branch, the constitutional officers, higher education institutions, and the other branches of state government. It was determined from the beginning of the project that to be successful, the State of Connecticut's technical architecture would have to:

- Be based on the strategic business direction of the state as an enterprise.
- Be based on a planning process that supports strategic business planning as well as ongoing tactical decisions made when implementing systems.
- Involve agency business managers as well as IT staff throughout the process.
- Provide strategic direction for making technology decisions without requiring wholesale and major changes to the current IT environment.
- Allow agencies to share many IT infrastructure components without sacrificing responsiveness to the changing business needs of individual agencies.
- Reduce the time it takes IT to satisfy ever shorter agency business change cycles by making the IT environment adaptable to change.
- Reduce the cost of IT over the lifecycle of each system.
- Have a governance process that supports the ongoing evolution of the architecture as well as its enforcement.
- Evolve in synch with changing business strategies.
- Be implemented in a short amount of time to avoid analysis paralysis.

In May 2000, an Architecture Team, made up of six DOIT managers and six senior agency managers, was established to discover and articulate the enterprise business requirements of the State for use within the EWTA process. These business requirements were documented in two essential documents: the Common Requirements Vision and the Conceptual Architecture Principles.

The Common Requirements Vision represents the environmental trends, major business drivers, business information requirements and requirements for technical architecture that tie the IT architecture to the business needs of the agencies and the State. The Conceptual Architecture

Principles represent the core business and technical principles on which all the technical domain architectures are based. That history and overview is captured in the Enterprise-wide Technical Architecture Introduction which can be found on the Internet at http://www.doit.state.ct.us/policy/domain/intro.pdf.

The Architecture Team defined nine domains, or groups of related technology, that include most of the components utilized in information technology. Nine teams of technical experts from throughout the State of Connecticut were deployed to develop the initial technical architecture for each domain. The results are documented in the nine Technical Domain Architecture Documents of the EWTA (see http://www.doit.state.ct.us/policy/domain/docs.htm). These documents define design principles, technical standards, product standards, and implementation guidelines that will be utilized by the agencies and DOIT, as well as vendors and consultants implementing state systems. It is the responsibility of the domain teams to maintain and update the domain technical architectures and the architecture documents when changes in the environment occur. Major changes to the domain architectures are handled through a formal process that involves the Architecture Review Board (see Appendix Six - Roles and Responsibilities).

The nine original technical architecture domains:

1. Platforms
2. Networks
3. Security
4. Enterprise Systems Management
5. Middleware
6. Data Management and Data Warehouses
7. Application Development
8. Collaboration and Directory Services
9. Web / E-Government

Using the Guidebook

This manual is designed to provide guidance to domain team leaders, domain team and subcommittee members as well as subcommittee chairpersons in developing, updating, and refining the EWTA technical domain architectures and their related documents.
The chapters are organized as follow:

Team Management Guidelines – for team leaders. Provides guidance on organizing and managing domain teams and their workload; also provides information on team member roles and responsibilities.

Developing a New Domain Architecture – for new team members or team leaders developing a new technical domain. Provides basic information on what domain architecture is, and the process used to develop it in the first place.

Updating a Domain Architecture – for team leaders, team and subcommittee members. Provides reference material about what triggers the need for a change to the domain architecture, the process for documenting recommendations for the update, and how updates are approved and published.

Identifying and Closing Gaps in a Domain Architecture – for team leaders, team and subcommittee members. Provides guidance on how to perform gap identification, analysis and resolution for a domain architecture.

Researching New Technologies, Products and Standards – for team leaders, team and subcommittee members. Provides guidance on how research of technology is conducted and documenting the outcome.

Conducting Architecture Conformance Reviews – for team leaders. Describes the process used to assess conformance to architecture standards.

Relating Domain Architecture to Infrastructure – for team leaders, team and subcommittee members, infrastructure service managers and project teams. Describes the relationship of the architecture work by domain teams and the enterprise infrastructure that is being planned and implemented by DOIT.

The Appendices - provides the templates used to structure EWTA deliverables, EWTA process diagrams, roles and responsibilities of all EWTA governance bodies, an examples of a domain specific configuration management process, and other relevant background information. In addition, these are many links back to the EWTA material and the published technical domain documents for reference.

Section 1 – Team Management Guidelines

The following section is designed to provide guidelines for domain team leaders on managing domain team activities, organizing and prioritizing workloads, and documenting deliverables. In addition, it will provide clarification of roles and responsibilities for members of the domain team, subcommittee members and chairpersons involved with domain activities. Roles and responsibilities for the other groups and teams involved with managing and governing the EWTA process can be found in http://www.doit.state.ct.us/policy/domain/excption.htm.

Roles and Responsibilities

Domain Team Leader
Each domain of the Enterprise-Wide Technical Architecture (EWTA) has a leader who manages the activities of the domain team to keep the domain architecture current and relevant, and represents the team in cross-domain and enterprise architecture planning activities.

The responsibilities of the team leader include managing all team activities, communications and outputs. These include:

- Periodic updating of the domain architecture and associated documents.
- Assigning and managing the domain team members, including the need to have regular meetings and a broad base of expertise on the team to cover the technical components making up the domain.
- Assuring that the technical components assigned to the domain are appropriate and provide any cross-domain coordination for components if needed.
- Developing and managing the execution of a work plan for all activities and deliverables that the team is responsible for, including:
  a. Decomposing Conceptual Architecture Principles into domain specific principles.
  b. Developing domain specific deliverables (i.e., design principles, technical standards, product standards, standard configurations, and guidelines).
  c. Coordinating on-going research activities of team members such as utilization of external research services and vendor presentations.
  d. Performing gap analyses to identify gaps between the installed base and the future state for each of the technologies within the domain teams purview.
  e. Identifying and developing initiatives to resolve gaps.
  f. Evaluating projects or proposals for conformance to architecture.
  g. Ensuring that the domain architecture and documents are refreshed as needed.
- Identifying resource needs required by for task listed above as part of work plan development.
- Overseeing subcommittees assigned to deliver specific tasks for the domain team.
- Coordinating and communicating with other domain teams and with infrastructure service managers, the Architecture Division and the Architecture Review Board.
- Documenting the domain architecture, preparing status reports and other deliverables required for approval of domain architecture additions or modifications.

Domain Team Members
The technical domain teams provide the knowledge and expertise required to develop the technical architectures. These teams are responsible for the development and maintenance of the content of domain architecture documents, including the domain specific deliverables (i.e. design principles, technical standards, product standards, standard configurations, and best practices). The teams are expected to keep abreast of new technology and make recommendations on new technology to close gaps in the current environment.

Each domain team of the EWTA consists of agency and DOIT technical personnel who have expertise in one or more technical components that make up the domain architecture. Membership is usually assigned on a year-to-year basis and members are expected to keep abreast of the technical trends and standards for their area of expertise. They provide support and consulting for the domain team based on what is best for the State of Connecticut as an enterprise.

Responsibilities of team members include:

- Attending regular domain team meetings.
- Ongoing enhancement of the domain architecture as tasks assigned by team leader.
- Ongoing research for assigned technical areas based on the member's expertise.
- Managing as chair or participating as a member of a subcommittee.
- Providing technical consulting in assigned technical areas as directed by team leader.
- Communicating EWTA and the domain architecture to agencies and vendors.

Domain Subcommittees
Subcommittees are set up by the domain team leader to work on a specific task or project related to the domain architecture. The domain team leader works with the subcommittee to develop specific objectives, tasks, deliverables and evaluation criteria for these subcommittees, and assigns a subcommittee chairperson to oversee this group. The chairperson is typically the expert in the technology being investigated.

The subcommittee chair oversees the group assigned and communicates the recommendations back to the domain team for discussion and approval. These efforts are often to research, evaluate and make recommendations for new technical or product standards for the domain and their implementation (see EWTA Update Process).

Responsibilities of the subcommittee chairperson include:

- Directing the activities of a subcommittee of the domain team.
- Reporting status of activities back to the team leader.
- Ensuring completion of deliverables assigned to the subcommittee.

Domain Team Meetings

Team meetings should be conducted at least once a month with the entire domain team. Additional sessions can be scheduled at the discretion of the domain team leader, but

subcommittees will conduct most domain teamwork beyond monthly meetings. Subcommittees will meet at the discretion of the domain team leader or the subcommittee chairperson for that group.

The monthly meetings of the domain team should be documented with minutes or a meeting summary (see DOIT-EWTA form DT-6 Monthly Status Report from a Domain Team in Appendix 2). Decisions made by the team that resulted in changes to the domain architecture should be reviewed and verified at the monthly meetings.

How to Target, Qualify, Obtain and Retain Team Members

Each EWTA domain is made up of a group of related technologies or components. While it is ideal to have an expert on the team for each technology component, experts may not exist in the State for some components and the team size needs to be kept to a manageable number. META Group recommends domain teams of six to ten members (maximum), with eight as the ideal size. The goal is to maintain a broad level of expertise across the team with some members responsible for one or more technologies. Additional technology expertise from outside the team can be used on subcommittees for specific research activities.

Recruiting the best-qualified personnel is one of the most difficult tasks of the domain team leader, since the best-qualified personnel are usually the busiest. Methods for targeting needed expertise include:

- Word-of-mouth among domain team members (the domain team members represent a community of technicians that often know who their peers are across the State and know it is in their best interests to have a qualified team).
- Utilizing the DP Skills Inventory, when implemented by DOIT, to get a profile of personnel experience in the state. The Enterprise Program Management Office (EPMO) within MOG may also be a source for identifying individuals with the right background.
- Posting opportunities in various list services and newsletters that are available to these technical experts.
- Working with the Enterprise Program Management Office to identify agency or DOIT projects that may require training in-house personnel or acquiring outside expertise in a technology area that is not covered by any expertise on the team. Specialized technical expertise that must be acquired for an agency or DOIT project could be utilized by the domain team to help the team evaluate this technology from a Statewide as well as the project's need.
- Utilizing the other EWTA groups such as the Architecture Division, the ARB or the Business and IT Strategy Board to find in-house expertise.

Qualifying the potential new member will require an understanding of the experience and competence needed for that technology component. Ideally, members should have some hands-on experience with major aspects of the targeted technology.

With the constant changes in technology, team leaders should look for a broad profile of expertise that demonstrates an understanding and aptitude for this area of technology. Team

members should have an understanding of the technology and how it is applied, rather than just expertise with one or two products or technology components. Team leaders can work with the Architecture Division to target appropriate training and access to research to round experience of team members.

Once a qualified person has been identified, the next step is to get them on-board. While knowledge of the EWTA process is reaching more agencies, you should not assume that the person knows anything about EWTA or architecture. Getting their interest will depend on your ability to convince them that the time spent in this process has value to them and the State of Connecticut. It would be prudent to identify other people with source credibility that this person can talk to about the value of the process.

Once an individual has agreed to participate in the domain team, the next step is to get clearance from their management to give them adequate time to participate. Team leaders should work with the Architecture Division to communicate the value of EWTA directly to the new member's management. The value must be articulated in terms of how it may help that agency, the projects being planned or implemented, the expertise of the person needed, and the ability to integrate systems with outside agencies and organizations. The time commitment may need to be limited at first until the qualified person or their management sees this value. This may mean limiting their involvement to a particular subcommittee or initiative at first. It may also mean getting an endorsement from the ARB, the Business &IT Strategy Board, or DOIT management to demonstrate the importance of their participation to the State of Connecticut.

To retain valuable technical expertise on the domain team or any subcommittee, it is important that members, and their management, are aware of the accomplishments of the team. Team members should always be encouraged and rewarded when possible for their work and never taken for granted.

Training requirements

All team leaders should attend the three-day training on EWTA. This provides context on how the process works and why, and on their role in the process. Periodic classes on EWTA for domain team members will be made available as well. In addition, all team members should be encouraged to receive training in their areas of expertise. While DOIT is not providing direct funding for individuals to do this, appropriate training is often a matter of knowing what classes are available and convincing members' management as to its value. Team leaders should obtain and share information on training opportunities in their domain. A team leader should expect to provide mentoring for a replacement team leader, through at least the first team meeting.

DOIT normally provides for half-day briefings by experts from external research services and web access to research materials. Some vendors provide product training at no cost. It is up to the domain team leader and team members to take advantage of these opportunities. There are also many specialized list services and web sites designed to keep technology communities updated and in touch. In addition, initiatives to define standards and best practices in new technologies will require vendor assessments and on-site visits, which provide opportunities to learn.

Documentation and Status Report Requirements

The technical domain architecture documents themselves are the primary documentation responsibility of the team leader, using content provided by the team. These documents are the repository of information describing domain technology components, as well as the associated standards, design principles, and guidelines that will be used by agency personnel or vendors and consultants working for agencies to implement systems. It is important that these documents continue to be updated and enhanced so that the work of the domain team has meaningful impact on all systems being built or enhanced. The process and associated documentation requirements are described in the Updating a Domain Architecture section of this guideline. The standard format for documenting the technical domain architecture is under development.

Monthly domain team meetings should be documented with minutes or a meeting summary and shared with the other domain teams to give everyone information on what activities and issues are being addressed. This provides information needed to identify and coordinate cross-domain activities (see DOIT-EWTA form DT-6 Monthly Status Report from a Domain Team in Appendix 2). Subcommittees must provide status reports on active initiatives to the domain team leader as well. The decision on the format of this report is left up to the domain team leader.

Managing and Prioritizing Workloads of Domain Teams

Domain team members are normally expected to be available for one day a month to support the work of the team. Additional time may be requested of a member for work on a subcommittee, with a subcommittee chairman possibly requiring up to one day a week. A team leader normally requires the equivalent of at least a half day a week to manage a domain team, meet with other domain team leaders to discuss cross-domain issues, and to represent the team for consulting and compliance engagements. Additional time (up to a day a week) may be by team leaders to oversee the work of subcommittees, deal with gaps, track the status of domain work, and conduct their own research.

With a limited amount of available resources and the significant amount of work involved in the architecture process, it is important that workloads be identified and organized. This workload planning is one of the important responsibilities of the domain team leader.

Prioritizing Workloads

Before workload can be defined and delegated, it is important to categorize the work so that it can be prioritized on an ongoing basis. While work should be prioritized within each category, the categories have different priorities relative to each other. Domain team workload can be categorized and prioritized on the following basis:

Responding to changes in the State's business needs

The successful implementation of EWTA is dependent on the technical domain architectures being able to directly support the business drivers and their associated Conceptual Architecture Principles. Therefore, the domain architecture must be reviewed periodically to assess the impact of changes to the business drivers and environmental trends of the State. This review must be the highest priority because of the potential impact to the ongoing work

of the team. This *work normally is completed within two weeks* of getting new Conceptual Architecture Principles or Requirements for Technical Architecture.

Gap Initiatives
Beside the annual refresh of the domain architecture and ongoing work on the domain documents, completing gap initiatives is the core ongoing work of the teams (see section entitled Identifying and Closing Gaps in a Domain Architecture). Gaps are prioritized once or twice a year by the teams and in conjunction with the other teams. Project plans for the highest priority gap initiatives are completed by the domain team leader and assigned to subcommittees to complete them. Priorities for gap initiatives are usually based on team input, the dependencies of other domains, DOIT priorities and availability of resources. While additional gaps may be found throughout the year, gap priorities do not change that often. Gap initiatives are the second highest priority for ongoing domain work.

Architecture Conformance Reviews
Domain teams have a role to play in the governance of the EWTA. One aspect of this is to review proposals to RFPs for architecture conformance. This activity can range from providing consultation on standards and implementation issues at a meeting with an agency, to a documented conformance review of a multi-million dollar vendor proposal to an RFP. The later can involve a significant amount of work (especially evaluating multiple proposals). This work is usually considered a high priority because it usually involves large projects and affects their timetables. Team leaders are dependent on good project planning by agencies to ensure that this work can be scheduled in a timely manner and with a minimum of interruption to the ongoing work of the team. Team leaders should work closely with the ITAD and the EPMO to estimate resource requirements and schedule time for work. Conformance reviews can take two to three weeks to complete and may require several team members' participation. Reviews requiring significant resource time may require leaders to document the impact on other projects and report this to the ARB for assessment.

Evaluating agency and infrastructure projects, and exception requests
Another ongoing governance responsibility of domain teams is the review of new agency and infrastructure projects during architecture consultations and conformance evaluations. In addition, agencies may file exceptions to the architecture with the Architecture Review Board that may result in an ARB request to the domain team for a written evaluation.

These evaluations are also a high priority, team leaders should try to monitor ongoing agency and DOIT projects to better anticipate, and schedule resource needs. This requires a close working relationship with the Enterprise Program Management Office to provide advanced planning and resource requirement information to the Architecture Division and the domain team leaders.

Updating the domain architecture
To be meaningful, the domain architecture must be updated periodically to relate to changes in the State's needs as well as the technology available. In addition, the domain architecture

documents should be refined to make them more useful and to provide guidelines on implementing the architecture.

This ongoing updating and refinement process is not as high a priority as the previous categories, but the resources and work involved must be accounted for in work plans to ensure it takes place. Much of this updating is an outcome of the EWTA Update Process, while the refinement of documents requires a more diligent management approach by team leaders.

Researching technology components and training
Domain team members should be assigned specific technology components to keep abreast of and identify changes in technology trends that may effect the refresh cycle or cause a gap in the architecture. Adequate time and access to information and training should be allocated to each expert, although most IT professionals keep up with technology related to their expertise during work hours while completing other duties. See Section 6 Researching New Technologies, Products and Standards section for more information on this activity.

Developing and Documenting Work Plans for Domain Teams

With the need to balance the workload and priorities of different categories of work in a domain, team leaders need to organize all work with a comprehensive work plan. A template is provided in Appendix 2 (DOIT-EWTA form DT-4 Gap Analysis Report from a Domain Team) to help team leaders monitor resources needed, timeframes required and deliverables involved with each task involving the team.

Work involving gap initiatives will be documented in an Action Plan (DOIT-EWTA form DT-1 Action Plan for a Domain Architecture Update requiring Architecture Review Board Approval in Appendix 2) so that it can be delegated to subcommittees for completion. Other work of the team can be managed using only the work plan.

The domain work plan should facilitate the organization and scheduling of work as well as to adjusting to the impact of new priorities such as compliance reviews and project evaluations.

Use of Subcommittees for Projects

Subcommittees should be used whenever work does not need the entire team. Managing a subcommittee involves more coordination, but the EWTA Update process has several forms to facilitate this. The subcommittee chair oversees the group and provides status reports to the domain team leader. When the subcommittee has completed its work, the chair communicates the recommendations back to the full domain team for discussion and approval. See the Updating a Domain Architecture section for more details on how to use subcommittees to manage workload.

Implementing Architecture

Question:	*Who is responsible for implementing the architecture?*
Answer:	*Everyone*

Ideally, architecture guides **all** IT decision making (infrastructure, application development, operations, etc.). An awareness of architectural conformance must become second nature. The domain architectures are intended to provide guidance for many day-to-day IT activities. For example:

IT procurement
Buy-versus-build decisions
Setting evaluation criteria in RFPs
Hardware upgrading
Software package/tool selection
Design decisions in the context of a specific IT project/system

Section 2 – Developing a New Domain Architecture

It's a creative process, not a cookbook!

This section is about creating a domain architecture for the first time. The process for updating an existing domain architecture is discussed in the next section of the guidebook. This section should be read by anyone who is unfamiliar with the EWTA process, in particular new members of existing domain teams or teams assigned to develop the architecture for a new domain. The most important thing to remember about developing a domain architecture is that it is a collaborative, iterative, creative process. A team effort is required because of the complexity of the individual technologies and their interdependencies. Domain architectures are never done because change is a constant in the realm of information technology and in the realm of government services. Architecture development is a creative endeavor that requires thoughtful analysis and inspired thinking to respond to the many challenges inherent in an architectural approach to deploying and managing technology to satisfy the business needs of the agencies.

What is a Domain?

A domain comprises a group of related technologies, usually organized around common IT infrastructure services or information management functions. The Architecture Team is responsible for determining how many technology domains are appropriate and assigning individual technologies to them. The list of technologies typically contains those currently in use and new technologies that are likely to be implemented in the near future. There are currently nine domains: Application Development, Collaboration & Directory Services, Data Management & Data Warehouse, Enterprise Systems Management, Middleware, Network, Platform, Security, and Web/E-Government. For the list of technologies covered by each of these domains see Appendix 3.

What is a Domain Architecture?

A domain architecture acknowledges and interprets the Conceptual Architecture and the Requirements for Technical Architecture in terms of the specific technologies and products associated with the domain. The architecture defines:

- General principles adopted from the Conceptual Architecture with rationales and implications further articulated for the domain technologies.
- Design principles specific to the domain technologies.
- Technical standards for the domain technologies.
- Product standards for the domain technologies.
- Standardized configurations and reusable components for the domain technologies.
- Guidelines and methods for the implementation and management of the domain technologies.

Why do We Want Domain Architectures?

The Enterprise-Wide Technical Architecture (EWTA) is an interrelated set of domain architectures. They are intended to guide all IT activities to support the State's business strategies and information requirements. These activities include the planning, design, selection, construction, deployment, support and management of information technologies. Over time, as the Enterprise Architecture Planning Program matures, the information requirements will be articulated as a formal information architecture. The EWTA also provides the basis for evaluating and prioritizing changes to the State's portfolio of information systems (referred to as the Applications Portfolio).

What is a Domain Architecture Based On?

When a domain team is charged with developing the technical architecture for a group of related technologies, the framework for their research and deliberations is provided by the Conceptual Architecture. The rationale for doing this is twofold. First, the use of a common framework allows multiple teams to work in parallel with some assurance that their recommendations will align with each other and support the work of domains with which there is technological overlap. Secondly, the domain architecture is based on a set of principles and requirements that are derived from the agencies' business drivers and business strategies. Defining the domain architectures within this business context provides the initial alignment of information technology to the State's business needs.

To provide a context for domain decisions, it is useful to have a mental map of the relationships between the deliverables defined during the creation of the Conceptual Architecture. Those relationships are as follows.

Environmental Trends – The environmental and technological trends that are driving change in the agencies. They include important internal and external forces as well as government trends at the federal, state and local levels.

Agency Business Strategies – The intentional responses of the agencies to each of their respective business drivers.

Enterprise Business Drivers – A consolidated list of the essential business change drivers that are common to a majority of State agencies and require a statewide technological response.

Enterprise Business Information Requirements – Who needs information, what information do they need, where do they need it, when do they need it, where does it come from, and what are the currency and integrity issues for that information. These information management issues are considered for each of the State's enterprise business drivers.

Requirements for Technical Architecture - What is required of the technical architecture to support the business information requirements of the State as an enterprise.

The Conceptual Architecture Principles – The core business and technical principles upon which domain architecture principles are based.

For an explanation of the process via which each of these deliverables is created, the reader is referred to the description of the Enterprise Architecture Process documented on the DOIT web site at http://www.doit.state.ct.us/policy/domain/overvw.htm.

Team Leader Activities

The Domain Team Leader must lead, guide, push, pull, cajole and encourage the team members to complete their individual assignments and to fulfill the responsibilities of the team. Architecture development is an iterative creative process. The team should be encouraged to approach its work with an open mind and leave sacred cows behind. Team leaders should strive to develop a rapport with each of the team members and to foster an atmosphere of mutual respect within the team. Delegation of work to team members is not only good survival strategy, but the team will be more effective when the members realize they are empowered to guide technology decisions for the State.

As coordinator of all domain team activities, it is imperative for the team leader to be well organized and to communicate openly and frequently with team members. Every member of the team must have complete and current documentation and understand what is expected of them at each step of the development of the domain architecture. Open and active communication with the IT Architecture Division, with the other domain team leaders and with infrastructure service managers will be essential for the coordination and resolution of cross-domain issues. A number of technologies and technical standards impact multiple domains and will require creative thinking and collaboration across domain team boundaries.

The team leader is responsible for all documentation generated for publication as part of the domain architecture. Delegation of responsibility for meeting minutes and draft documents is appropriate, but the team leader is responsible for the quality and completeness of any documentation produced by the team and all its subcommittees. See Standard Format for Domain Team Documents below for information about the format and content requirements for domain team deliverables.

Domain Team Activities

Review and Acceptance of the Domain Technologies
The first task of a newly formed domain team is to review the technologies assigned to the domain by the Architecture Team. If the domain team believes that a technology is more appropriately addressed in another domain, that recommendation must be proposed to the Architecture Team. When the list of technologies is finished, the domain team leader must assess whether the team has the knowledge and experience to address all the technologies. The IT Architecture Division can then assist with recruitment of missing subject matter experts.

Review of Functionality and Major Issues for the Domain Technologies
It is important to organize the working list of domain technologies into functional categories in order to establish a baseline understanding of the technologies, and to facilitate prioritization and delegation of work. The team then prepares a list of functions that should be addressed within each category. Missing technologies will be revealed during this brainstorming activity. The master list of domain technologies is then revised. A list of issues is defined for each of the

technology categories within the domain. This information will help set priorities for the domain team's work, especially if the team will not be able to address all technologies within the time allowed for the initial development of the domain architecture.

Review and Adoption of Conceptual Architecture Principles
A thorough grounding in the Conceptual Architecture is essential to the successful development of the enterprise architecture. Therefore, the third major task of the domain team is to analyze and interpret the Conceptual Architecture Principles in terms of the domain's technologies. This analysis results in the adoption of Conceptual Architecture Principles as general principles for the domain, with rationales and implications that are specific to the technologies within the domain. Implications will become important during the completion of gap analysis activities. It is important that thoughtful consideration be given to implications of implementing domain technologies so that they conform to the Conceptual Architecture Principles.

Review and Interpretation of RTAs for Domain Technologies
The fourth major task of the domain team is to analyze and interpret the Requirements for Technical Architecture (RTAs) in terms of the domain's technologies. This will assist with the definition of domain architecture principles, and identification of gaps in infrastructure services and support organizations. RTAs will also guide the selection of technical standards within the domain.

Defining Design Principles Specific to the Domain Technologies
During the analysis of Conceptual Architecture Principles and the Requirements for Technical Architecture, it will become apparent that additional principles are needed to guide the implementation of domain technologies. These design principles must be documented in the same format as the general principles, complete with rationales and implications.

Setting Priorities for Domain Team Work
The team must establish priorities for its work based on a number of factors. These include:

- Availability of subject matter experts.
- Need for infrastructure services that conform to the Conceptual Architecture and satisfy the Requirements for Technical Architecture.
- Severity and urgency of issues, and the priorities and budget of the Department of Information Technology.
- Major agency projects that require architecture guidance.
- Availability of resources to define low-level architecture specifications for configurations and to write implementation guidelines based on practical experience.
- Time available to complete the first iteration of architecture development.

Domain Architecture Gap Analysis
The first time through the EWTA process, there is usually insufficient time or expertise on the domain team to cover everything. These are gaps within the domain architecture itself. If current products or standards are not capable of meeting the strategic goals of the EWTA, they

are also gaps in the domain architecture. Each of the functional areas or technologies within the domain that require further research and analysis will be prioritized and incorporated into the domain team work plan by the team leader. See Section5 Identifying and Closing Gaps in a Domain Architecture for additional information.

Review and Acceptance of all Subject Matter Expert Work
Some of the domain team's work will be delegated to members with deep technical knowledge and practical experience with one or more of the technologies. This allows multiple architecture research and evaluation efforts to run concurrently. All deliverables from subcommittees are subject to review and acceptance by the full domain team. The team is responsible for ensuring that lower level decisions remain true to the Conceptual Architecture, conform to the domain's own principles and will not create conflict with other domain architectures.

Subject Matter Expert Activities

Descriptions and Status of Domain Technologies
For each of the domain technologies, a brief description is written to assure consistent definitions within and across the domains. These descriptions also help readers understand unfamiliar technologies and their relationships with other technologies. These descriptions are updated over time to reflect changes in the capabilities and maturity of the technologies. It is preferable that a subject matter expert write each of the descriptions or at least have primary responsibility for researching the current state of each technology and its related technical standards. For ongoing work, these team members will assume responsibility for tracking those technologies and standards.

Conformance to Domain Architecture Principles
Each of the IT products and technical standards currently in use within State agencies should be rated for its conformance to technical standards, general conformance to the domain architecture principles and ability to satisfy the Requirements for Technical Architecture. Someone familiar with the technology or technical standard, preferably a deep subject matter expert, should perform these evaluations. Each product and technical standard is then categorized as Strategic, Transitional, Obsolete or Research/Emerging.

> *Strategic* - These are the standards and products selected by the state for development or acquisition, and for replacement of obsolete or transitional standards or products. (Strategic means a three to four year planning horizon.) When more than one similar strategic standard or product is specified for a technology category, there may be a preference for use in statewide or multi-agency development. These preferred standards and products are indicated where appropriate.
>
> > **Note**: some strategic products may be in "pilot testing" evaluation to determine implementation issues and guidelines. Pilot testing must be successfully completed prior to full deployment by the agencies or the State.
>
> *Transitional* - These are standards or products in which an agency or the State has a substantial investment or deployment. These standards and products are currently supported by DOIT, the agencies, or the vendor (industry, manufacturer, etc.). However, agencies

should undertake development using these standards or products only if there are no suitable alternatives that are categorized as strategic. Plans should be developed by the agencies or the State to move from transitional to strategic standards or products as soon as practical. In addition, the State should not use these standards or products for development.

Note: many older versions of strategic standards or products fall into this category, even if not specifically listed in a domain architecture document.

Obsolete - It is highly likely that these standards or products, while still in use, will not be supported by the vendor (industry, manufacturer, etc.) in the future. Some products and standards have already reached the non-supported state. Plans should be developed by the agencies or the State to rapidly phase out and replace them with strategic standards or products. No development should be undertaken using these standards or products by either the agencies or the State.

Research / Emerging - This category represents proposed strategic standards and products that are in advanced stages of development and that should be evaluated by the State. Some of these standards or products may already be undergoing "hands-on" evaluation. Others will need to be tracked and evaluated over the next 6 to 18 months.

Recommending New Technical Standards and Technologies

During the course of technology and standards research, evolving standards and new technologies will be identified that support the domain architecture and the business goals implicit in the Conceptual Architecture. Standards that are expected to be worthy of inclusion in the domain architecture when they are adopted by the IT industry should be declared as emerging standards that will be tracked by the domain team. They can then be included in the domain team's work plan and be assigned a priority and adequate resource time. For information on the assessment of emerging technical standards during routine research and monitoring of technologies, see the chapter on Researching New Technologies, Products and Technical Standards. If a standard has evolved to the Request for Comment stage (RFC version published), or a product is available in a BETA version, it can be declared as a subject of research. The team leader can then draft a proposal for how to best proceed with evaluating the new technology or technical standard. (See the chapter on Updating the EWTA for specific information about this process and its deliverables).

Documenting Standard Configurations and Reusable Components
One of the Conceptual Architecture Principles requires that applications, systems and infrastructure employ reusable components across the enterprise. For infrastructure, reusable components are defined as standard configurations. For applications and systems, reusable components are defined as libraries of modular programming code and standardized infrastructure services respectively. Code libraries will be developed as a central resource for application development teams. Infrastructure components are typically those that DOIT is responsible for on a statewide basis, or that will be widely deployed by the agencies.

Documenting Guidelines and Methods for Implementation and Management
Guidelines are practical advice for implementation and management practices based on the experience and research of the State's most knowledgeable experts. Methods are more formal and more prescriptive. When approved methods are embodied in products, they will become strategic products.

Standard Format for Domain Team Documents

Templates for these documents are found in Appendix 2

Domain Architecture Document
Monthly Team Status Reports (DT-6)
Gap Analysis Report (DT-5)
Hands-on Research Work Plan (DT-3)

Cross-Domain Issues

A number of technologies and technical standards impact multiple domains and will require creative thinking and collaboration across domain team boundaries. It is essential that all members of all domains are familiar with the complete set of domain architectures. Some technology overlaps are more obvious than others are. For some technologies, the synergy between domain architectures is of overriding concern. Some domain technologies provide infrastructure services for other domains. In the practical application of architecture, systems are constructed with components from all the domains. Therefore, all the domain architectures must be in synch with each other. Open dialogue and cross-fertilization of ideas among the domains is very important. Cross-domain issues must be documented and discussed at the regular domain team leader meetings.

Section 3 – Updating a Domain Architecture

> *All changes to a domain architecture must remain true to the EWTA Conceptual Architecture and satisfy the Requirements for Technical Architecture (RTAs).*

This section describes the types of changes that can occur while updating a domain architecture and the process and deliverables for making them. There is a formal approval process for specific types of changes that will have major impact. The domain team has the authority to make other types of changes on its own, as long as there is consensus among the team members and they conform to the prime directive for domain teams as stated above. The specifics of the types of changes that fall into these two classes are detailed below in this section.

Events Leading to Domain Architecture Changes

Strategic Planning
Annual agency planning activities can cause revisions to the EWTA source documents, which in turn will trigger a comprehensive review of all the domain architectures. New business change drivers and business information requirements will impact the Conceptual Architecture Principles and the Requirements for Technical Architecture (RTAs). Changes in industry best practices for information technology can also impact the Conceptual Architecture Principles. These too will require a comprehensive review of all the domain architectures to determine the impacts (if any).

Agency and Infrastructure Projects
Routine project activities such as requirements analysis and architecture consultations may reveal a need to rework or refine portions of the architecture. As the architecture specifications for infrastructure services are defined, a deeper understanding of the cross-domain dependencies may require domain changes to reconcile lower level architecture elements such as interface standards, standard configurations and implementation guidelines.

Domain Team Activities
A basic premise of the EWTA process is that the domain architectures can only remain relevant through constant refinement and the resolution of gaps that are identified by the domain team. Change is supported and driven by the domain teams research activities. Routine technology tracking and focused research related to specific conformance reviews and project consultations will reinforce the need for greater conformance is some areas and greater flexibility in others.

Frequency of domain architecture updates
The frequency of updates to the domain architecture depends on a number of factors. Some technologies are rather volatile and experience rapid or frequent changes, while other change little in six months. Infrastructure and agency projects, while usually keyed to budget cycles, may occur at any time.

Domain architecture updates should happen at least once per year and should occur and work in conjunction with the mid-June agency planning cycle. It is expected that a change requiring ARB approval (see below) will occur every 3 to 6 months on average.

Two Primary Classes of Changes to Architecture Documents

There are two primary classes of changes to domain architectures and their associated documents, those that require the approval of the Architecture Review Board, and those that do not.

Changes that require ARB approval

- Adding or removing principles, technical standards, or product standards
- Adopting methods that become mandatory or are embodied in products that are categorized as strategic
- Significantly altering the meaning or intent of a principle, technical standard or product standard
- Changing the status of a product, i.e., from research to strategic, from strategic to transitional, from transitional to obsolete
- Making any change that will have major impact on technology products, agency financial or personnel resources, or on the ability of an agency to implement application systems
- Requiring modification of a pending RFP (SOW etc.) or an RFP currently out for bid
- Requiring changes to ongoing implementation projects
- Greatly accelerating the agencies' transition planning for implementing a new architecture

Changes that a domain team can make under its own authority

- Updating version numbers of product standards
- Adding or refining narrative to provide a better explanation of component technologies or standards
- Providing guidelines for the implementation and management of component technologies or technical standards
- Documenting reusable components and configurations
- Updating the technology review section of a domain architecture document
- Adding, updating, or deleting a best practice, provided it does not have a major impact on an agency or on multiple agencies
- Recommending changes in component technologies or their domain assignments
- Adding new technologies, products or technical standards to the research category
- Identifying new gaps in the architecture for the To Be Determined section
- Removing technologies, products or technical standards from the research category if routine research and monitoring indicates that they are not viable or will not fit within the EWTA.

Process and deliverables for changes that require ARB approval
Changes to the domain architecture that require approval of the ARB will follow the "Approved EWTA Update Process – June 7, 2001 (see EWTA Update Process Workflows below) and will utilize the deliverables defined for that process.

Process and deliverables for changes that do not require ARB approval
See the section entitled *Researching New Technologies, Products and Standards* for a discussion of the process and expected deliverables related to research activities.
Changes that do not require approval by the Architecture Review Board must always be documented. This is accomplished by updating the *Table of Changes* located at the beginning of each domain architecture document. The change statement must include the date of the change. It must also include a succinct but complete description of the item that changed and its location in the architecture document, *e.g., "In Table 2 Middleware Product Selection Matrix added STC e*Gate™ to Messaging and Application Integration Products – Research"*.

Changes can be proposed by anyone on the domain team but must be reviewed and approved by the full domain team. The domain team must consider cross-domain implementation issues before making any change. Only then should the domain team leader edit the document and submit it to the IT Architecture Division for review and publication. If ITAD concurs that ARB approval is not needed, ITAD will notify the other domain teams leaders of the proposed change. The team leaders will provide a peer review and commentary.

The new version of the domain architecture document, with appropriate change notices, will be published on the DOIT web site. ITAD will also provide a summary report to the ARB outlining the changes that the domain teams have made to the domain architectures. Advisory notices will be sent to the agencies by ITAD.

Documenting Reusable Components and Configurations

Domain team leaders must work with their technology experts to define the appropriate content and standard formats for documenting reusable components and standard configurations for each of the domain technologies. As this will vary significantly from domain to domain, there is no single prescribed format that can be used for all technologies. For some technologies the content and format may be governed by methods and tools selected for implementing or managing those technologies. Of equal importance to the elements used to define reusable components or configurations is the process for creating and updating them. As an example of how to approach both process and documentation for standard configurations. See Appendix 6 Example of a Configuration Management Process for information about the Standard PC Configuration Specification developed by the Platform Domain.

The reader is also referred to the section entitled Section 6 Researching New Technologies, Products and Standards.

Standard Format for Domain Architecture Documents

Domain Architecture Document (see Appendix 2 **note:** this is a planned template.

EWTA Update Process Workflows

On June 7, 2001, the Architecture Review Board (ARB) approved a formal process for updating domain architectures. The process accommodates three types of changes to the architecture. One, those changes not requiring hands-on research prior to board approval. Two those changes requiring hands-on research prior to a final decision. Finally changes that would require a prototype or pilot project prior to a final decision. It is the responsibility of the domain team leader, in consultation with the domain team, to decide which type of change is required. Regardless of the proposed change, each workflow is preceded by a set of common activities.

Initial Workflow Activities

The process starts with a decision to affect a significant change in the domain. After consulting with the domain team, the team leader prepares a FormDT-1 Action Plan for a Domain Architecture Update requiring Architecture Review Board Approval. A template for this can be found in Appendix 2. At this point in tine update process, decisions have been reached as to the degree of effort required and whether or not hands-on research will be required.

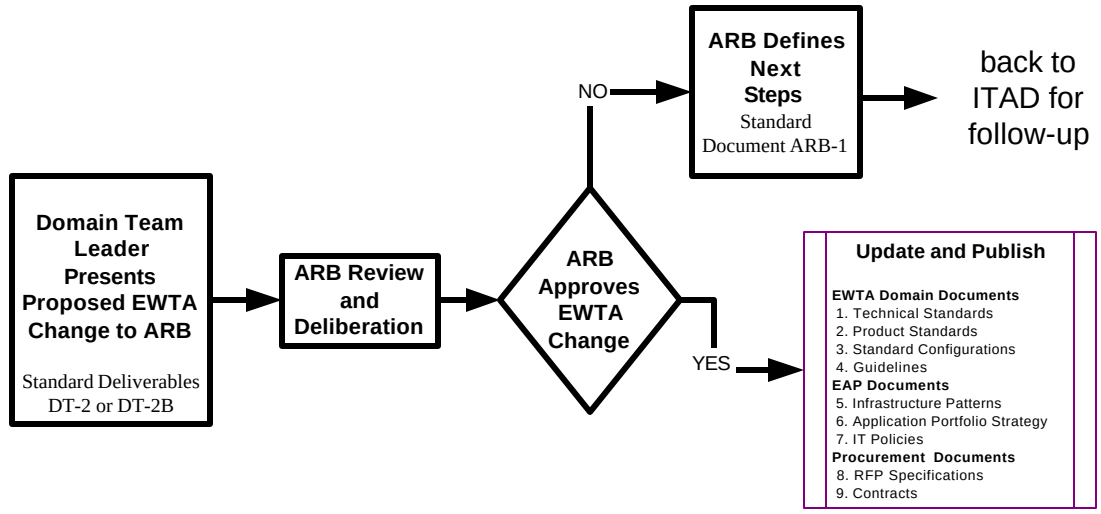
After a quality assurance review, the ITAD will coordinate with the EPMO for an assessment of resources that might be needed and for potential impact on DOIT or agency projects. ITAD handles the coordination with other domains that are impacted by the anticipated change to the domain architecture. ITAD will also maintain the involvement of other domain teams in the review process. Following a short commentary period for the other domain teams, ITAD consolidates the reviews and communicates those results to all involved domain team leaders. At this point, the domain team will update the action plan as needed, following which ITAD will forward the DT-1 to the CTO for a review of resource requirements. ITAD will work with the domain team to resolve any problems with the scope of the research as identified by the CTO. Once the CTO has approved the use of the identified resources, the domain team leader assembles a subcommittee and appoints a chair. Subcommittees may be as small as one or two people, or as large as needed. Subcommittee members are generally domain team members, unless a non-member is needed because they are a subject matter expert, or because the topic has cross-domain impacts.

The subcommittee is responsible for conducting any research and evaluations outlined in the action plan. See the section on *Researching New Technologies, Products and Standards* for more information. Following the conclusion of the research and evaluation, the subcommittee prepares a preliminary report and recommendation (FormDT-2 Recommendation for Change by Subcommittee / Full Domain Team) found in Appendix 2) and submits it to the entire domain team for review and comment. Once a final version has been accepted by the domain team, the team leader forwards the DT-2 to ITAD for a quality assurance review and for a peer review by the other domain team leaders. The team leader adjusts the DT-2 and proceeds to the next steps in the process. The nature of these next steps depends on whether or not hands-on research or a Proof of Architecture Assessment (POAA) is needed.

Flow One – No Hands-on Research

The simplest next step in the process is for the team leader to present the proposed change to the domain architecture to the ARB. This assumes that no hands-on research or proof of architecture

Figure 1 Submitting a domain change to the ARB



assessment is required. The flow is relatively straightforward (see Figure 1 Submitting a domain change to the ARB below). The team leader makes a presentation to the ARB about the proposed change. The ARB then reviews the proposed change and comes to a consensus. Depending on the nature of the change this might take a week or more, and require additional information from the team leader.

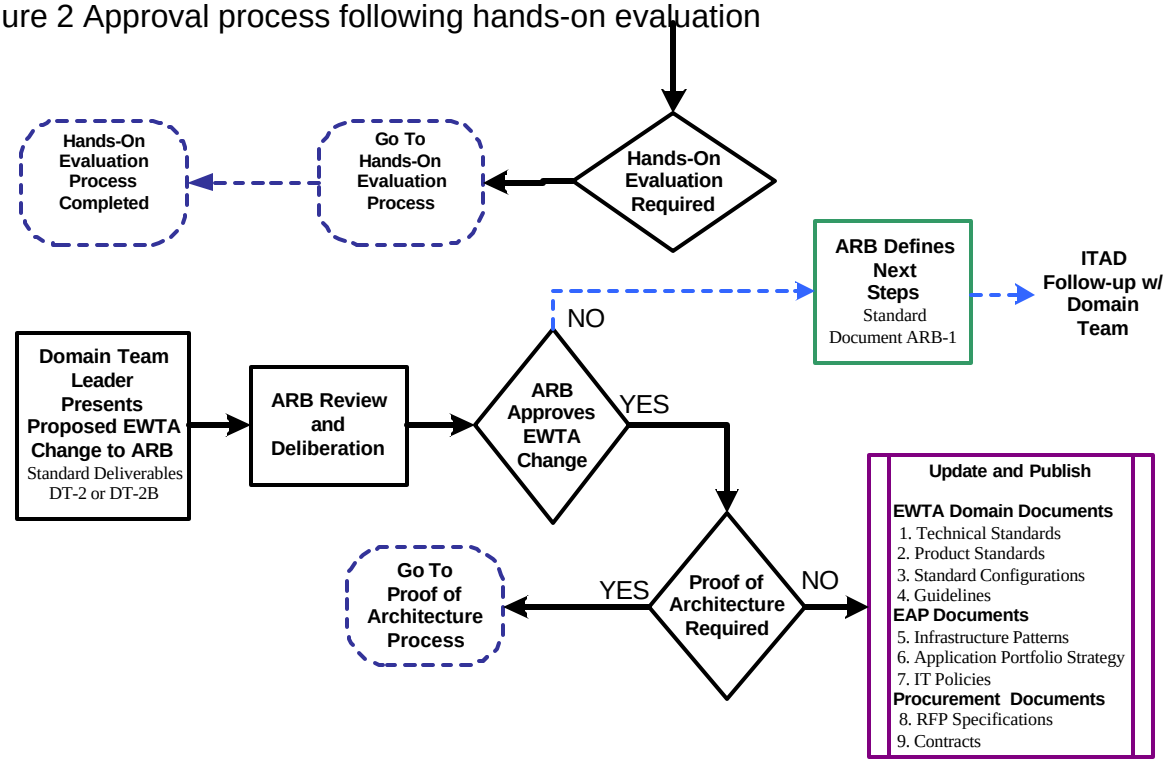
Should the ARB approve the change to the domain architecture, ITAD will coordinate the updating and publication of the revised architecture. See Update and Publish box in Figure 1. Should the ARB decline to approve the change, they will document the decision and recommended next steps in a FormARB-1 Architecture Review Board Rejection of request for Domain Architecture Change (in Appendix 2). ITAD will work with the domain team on any follow-up activities or next steps.

Flow Two – Hands-on Research

There is a formal process and standard deliverables for research situations that require hands-on evaluation (see Figure 2 Approval process following hands-on evaluation below, and Appendix 4 Diagram 2 - EWTA Hands-on Evaluation Process). The hands-on evaluation could involve interoperability testing with infrastructure components or a real world shoot-out between two products that appear to be equivalent in terms of functionality and usability. The subcommittee usually determines during the course of paper-based research effort that a hands-on evaluation is required. After review of the DT-2 deliverable by the full domain team and the IT Architecture Division, the subcommittee chair prepares Form DT-3 Hands-on Project Plan Template Appendix 1) for the evaluation.

The IT Architecture Division completes a scripted quality assurance review and coordinates with the Enterprise Program Management Office (EPMO) to review the proposal and prepare a report on the availability of the resources requested for the evaluation (standard deliverable EPMO-1).

Figure 2 Approval process following hands-on evaluation



The proposal is then reviewed by the Chief Technology Officer (CTO). The CTO can request that the proposed evaluation project be scaled down, that the priority for the project be reduced, or that the subcommittee does additional paper-based research. When the project proposal receives the blessing of the CTO, the EPMO assigns staff and schedules their time on the Master IT Resource Schedule. The project manager for the evaluation (not necessarily the subcommittee chair) assembles and briefs the project team. The project manager procures or otherwise obtains necessary products, schedules time in the lab, oversees the lab set up and manages the hands-on evaluation. The project manager prepares regular status reports for the research subcommittee and the IT Architecture Division. The ARB receives monthly updates on the status of all evaluations. When the evaluation is complete, the project team prepares the FormDT-2B Post Hands-on Evaluation Report and Recommendation (found in Appendix 2) in collaboration with the subcommittee, for review and acceptance by the full domain team. After a scripted quality assurance review by the IT Architecture Division, the report is released to the domain team leader for final resolution. If no further action is recommended, the report is filed and a final report is given to the ARB. If the hands-on evaluation results in a request to change the domain architecture, the domain team leader follows the process described in figure 2 above for submitting a domain change to the Architecture Review Board. In this case, the DT-2B is presented to the board.

If the change request is not approved, the ARB defines next steps in standard deliverable ARB-1 and ITAD coordinates with the appropriate groups to accomplish them.

If the change request is approved, the IT Architecture Division will coordinate the update and re-publication of appropriate architecture documents as well as the development and release of an advisory memorandum.

Flow Three – Proof of Architecture Concept
If a hands-on evaluation is successful but the complexity or risks indicate the need for a formal pilot or prototype implementation, the subcommittee prepares a proposal to conduct a Proof of Architecture Assessment (POAA). The process is illustrated in Figure 3 Approval following Proof of Concept below, and Appendix 4 Diagram 3 – Proof of Architecture Process. The proposal is documented in FormDT-5 Proof of Architecture Assessment Project Plan Template (found in Appendix 2). As with the hands-on evaluation, the ITAD completes a quality assurance review and coordinates with the EPMO for a report on the availability of resources (EPMO-1 EPMO Resource Review in Appendix 2).

Unlike the request for hands-on evaluation, which only requires the blessing of the CTO, a request for a Proof of Architecture Assessment requires formal approval by the Architecture Review Board. The ARB can request that the scope of the project be revised, that additional research be done, that another agency project be chosen as the basis for the assessment, or that the priority for the project be reduced.

If the ARB approves the proposal, the IT Architecture Division works with the Liaison Group to negotiate a memorandum of understanding with the agency to use its project for the POAA. DOIT and the agency then prepare for and launch the project. The management of the project should follow the State's standard project management protocol s. Proof of Architecture requirements and deliverables are incorporated into the agency's project plan and procurement documents. The EPMO assigns staff and schedules their time on the Master IT Resource Schedule. The project manager assembles and briefs the project team. The EPMO will provide oversight for all standard project management activities.

During each of the phases in the agency's project, there will be specific EWTA evaluation criteria that are considered. The specific criteria may vary somewhat from project to project but in general, the shift in focus will be as follows:

- During the design phase of the project, design principles, technical standards and best practices are the focus.
- During the build or construction phase of the project, standard configurations, methods and documentation are the focus.
- During the test phase, interoperability with standard infrastructure services is conducted.
- During phased implementations, an assessment of scalability and usability will be made.
- During full implementation of the product, rigorous analysis of reliability and scalability will be accomplished.

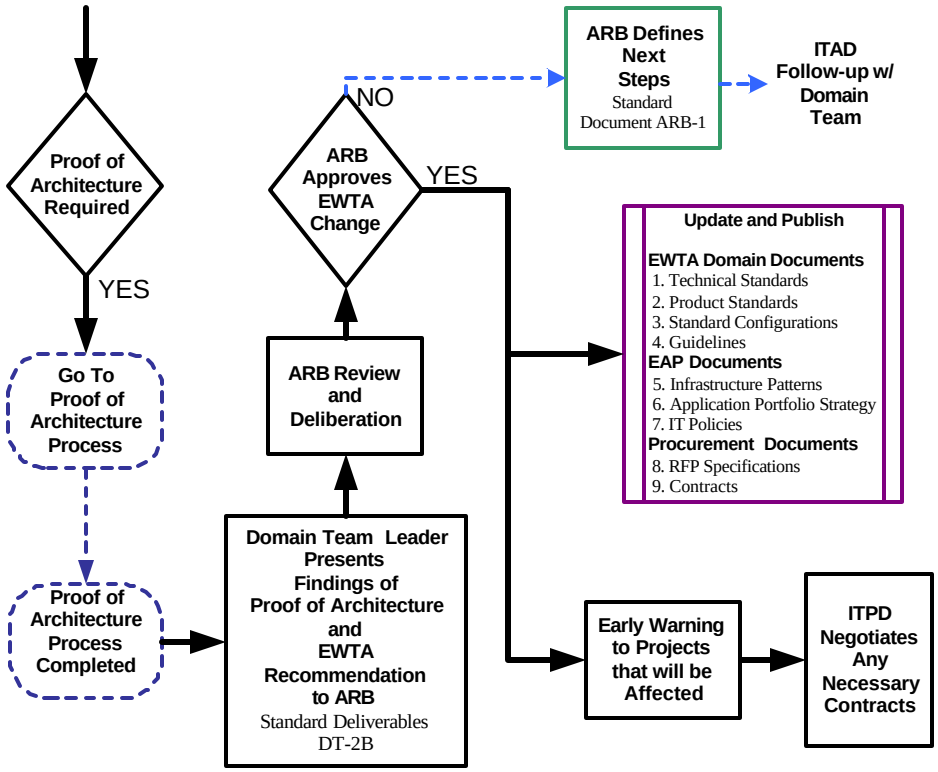
Regular status reports on project progress and EWTA evaluation results will be provided to the subcommittee and ITAD for ARB updates and review by the domain team. Regular status reports also go to the EPMO for project quality assurance review.
At the conclusion of the project, the project manager and the subcommittee chair prepare a formal report on the results of the POAA (see FormDT-5B Post Proof of Architecture Assessment Report and Recommendation found in Appendix 2). As usual, the report must be reviewed and accepted by the full domain team and pass quality assurance review by the ITAD before being released.

If no further deployment is recommended, the report is filed and a final report is given to the ARB. If the Proof of Architecture Assessment results in a request to change the domain architecture, the domain team leader follows the process described below in Figure 3 *Approval following Proof of Concept*. In this case, the DT-2C is presented to the board.

If the change request is not approved, the ARB defines next steps in standard deliverable Form ARB-1 and ITAD coordinates with the appropriate groups to accomplish them.

If the change request is approved, the EPMO issues an early warning to agencies for projects that will be affected by the change. IT Procurement negotiates any necessary contracts. At this point the IT Architecture Division will coordinate the update and re-publication of the appropriate architecture documents as well as the development and release of an advisory memorandum.

Figure 3 Approval following Proof of Concept



Section 4 – Identifying and Closing Gaps in a Domain Architecture

As part of their ongoing research, or in reviewing and revising products or technical standards, domain teams will undoubtedly identify "gaps" in domain technologies. Gaps are items that are nonexistent or inadequate in the current IT environment, for example, what is missing, improperly structured, or non-standard.

Once identified, these gaps should be captured in the DOIT-EWTA form DT-4 Gap Analysis Report from a Domain Team (found in Appendix 2 of this guidebook).

This document will be utilized as a reference and planning tool by the enterprise agency planning team and the Enterprise Program Management Office (EPMO). It is important that domain team leaders have their gap identification document completed prior to mid-June in order for the document to be beneficial to the agency planning process.

The Key Steps in Gap Analysis

1. Complete the identification of differences between the "as-is" (or "current state") and target domain architecture.
2. Analyze gaps between the "as-is" and the target domain architecture.
3. Develop recommendations (actions) to close the gap.
4. Identify and prioritize interdependencies of recommendations.

Step One – Identifying Domain Gaps

Differences between the current and target architecture
Most of the gap identification occurs during the creation of the domain architecture. The domain team completes the identification of differences between "as-is" (or "current state") and target domain architecture within the context of principles, technical standards, product standards and best practices. Some gaps may have been identified earlier and formed the basis of the domain principles. These gaps were created by the team to identify technologies needed to satisfy Requirements for Technical Architecture (RTAs) in the target domain architecture. Thus, they focused on technology and products, not how they are used or implemented. The additional work of gap identification focuses on the latter requirements. Some sources of gaps are:

- Requirements for technical architecture (RTAs) that are not met by current technical infrastructure
- Policies that do not exist but may be needed
- Standards, either existing or new
- Products, either existing or new
- Configurations and current infrastructure patterns
- Lack of training in new skills

Other sources of gaps are "overlaps" - needless complexity of products/solutions in the same technology category, and insufficient product standards for implementation (see Gaps created by the Exception Process or Agency Project Needs below).

Figure 4 Example Gaps for Data Management illustrates typical gaps for the Data Management and Warehouse domain.

Using Fundamental Questions
Teams often find it useful to focus on the following fundamental questions when discovering gaps.

- What will this (Principle, Architectural Requirement, etc.) mean to us?
- What are its impacts/issues?
- What dimensions reveal the impacts (i.e., processes, policies, metrics, culture, structure, technologies?)

Gaps created by the Exception Process or Agency Project Needs
Given the dynamic nature of technology and changing agency needs, it is likely that there will be required solutions using products or standards not covered in a domain architecture. In such cases, the team should designate these products or standards as gaps and assign them to be researched.

Figure 1 Example Gaps for Data Management

- No policies for decisional data analysis
- No data warehouse
- No repository
- Multiple databases with duplicate data copies — No authoritative source identified
- No standard data movement technology
- No standard data cleansing technology — same data cleansed (using different tools) multiple times for multiple target databases
- Inconsistent usage of query and OLAP tools
- Too many products deployed

Refining Gaps
Once new gaps are identified, the team should collect, aggregate, and sort the gaps, followed by the consolidation of related gaps. Gaps should be reworded for clarity and reviewed by the entire domain team to confirm the gap.

Step Two – Analyzing Domain Gaps

Once the gaps have been identified, they need to be analyzed by the team. The analysis of domain gaps requires creative and collaborative minds. There is no set procedure for the analytic process.

For each gap identified, the team should develop alternative solutions to "fill" the gap. For example:

- Is a new solution (application, data, technology) required?
- Is major research including hands-on or Proof of Architecture Assessment required?
- Are new skills required?
- Is a new approach required?

- Is a new implementation of old technology required?
- Are new behaviors required?
- Are new IT policies required?
- Are new or expanded support resources required?

The domain team should "flesh out" the solution details: description, components, rationale (principles, / RTAs, gaps being addressed), business benefits, dependencies (if any), and the specific actions steps required to close the gaps. If time permits, the team should provide sufficient detail in the initiative description for use in future comparisons and capital budgeting process.

For the larger or more complex gaps, it is helpful to consider incremental steps for closing it.

Step Three – Develop Recommendations

Recommendations on closing the gaps can take many forms. For example:

- Eliminate duplicate and inconsistent databases; functionally duplicate applications; obsolete and unused technology components
- Enhance and support database sharing.
- Promote shared applications and component reuse.
- Replace nonstandard products/configurations with standard offerings.
- Other changes (e.g., re-training to develop new skills, restructuring working groups or organizations, it policy making).

Step Four – Prioritize Recommendations

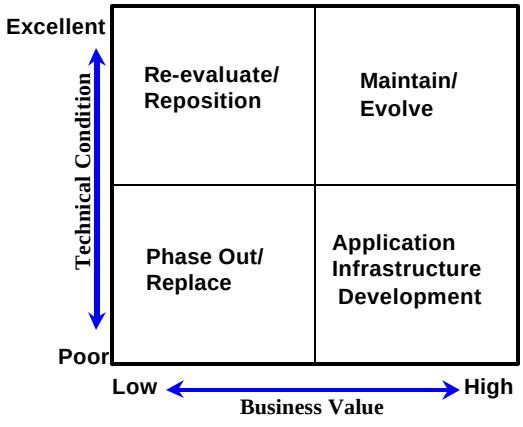
Not all gaps require immediate action, for instance, some gaps

- Can not be filled right away,
- Should not be filled (for business reasons),
- May never be filled due to priorities, or
- May be optionally filled by business units or an enterprise effort.

The gaps that do need action need to have priorities established for them. These priorities can be internal to the domain team, or can be external, if a project is recommended to fill the gap. This latter prioritization should be done jointly with EPMO. This helps to ensure that the priorities are as consistent as possible with those of the business and other active or planned initiatives.

Interdependencies must be identified between applications, infrastructure, information

Figure 2 Migrating the Application Portfolio to meet enterprise business needs



recommendations, and other gap-closing efforts. For applications or infrastructure the planning should address the technology 'fit' and business value of applications at the application, business process and enterprise levels. One model that META recommends is to look at a matrix comparing the business values and the technology condition of applications (see Figure 2).

Section 5 – Researching New Technologies, Products and Standards

The two main ongoing activities of domain teams are doing research and analyzing gaps. This section of the manual deals with the research activity.

Reasons for Doing Research

The fundamental reasons for conducting research are a reflection of the original factors that lead to the creation of the domain architecture (see What is a domain architecture based on? above). These are:

Reviews of Technology in the Marketplace and Technology Trends
One of the primary on-going activities of the members of a domain team is the regular review of technology trends and changes. Domain architectures are not static, but adaptive.

Gap Analysis Activities
Another primary activity of a domain team is filling known or newly created gaps in the architectures (see Section 6 Identifying and Closing Gaps in a Domain Architecture).

Conceptual Architecture Changes
The EWTA Conceptual Architecture is not static, but adaptive, thought the frequency of changes is less often than seen with domain architectures. The same basic influences on the development of a domain architecture (see Section 3 Developing a New Domain Architecture) can also lead to changes in existing domain architectures:

- Business Change Drivers
- Requirements for Technical Architecture
- Conceptual Principles
- Application Portfolio

As indicated in the section on Team Management, analysis of, and dealing with, the impact of changes in the Conceptual Architecture is the highest priority task of a domain team.

New and Planned Projects

- DOIT and multi-agency infrastructure activities
- Multi-agency and single agency IT projects

Assigned Research
Assigned research is limited duration, topic specific research that has been assigned to the domain team by either the CTO or the Architecture Review Board. Assignments from the Architecture Review Board would normally derive from the EWTA exception process (http://www.doit.state.ct.us/policy/domain/excption.htm).

Domain Team Research

What needs to be researched?
The predominant research topics are trends and changes in the domain technologies, product standards and technical standards, and specific research undertaken by subcommittees for proposed changes to the domain architecture. Additionally, the gap analysis / closure process often generates a need for specific research. Other research topics are generally assigned by the domain team leader.

How often should technology be researched?
The timing of the tracking of trends and changes in technology is up to individual team members based on their own personal styles. However, a sweep through the major sources of information (see below) should be undertaken at least monthly. A shorter refresh cycle might be needed based on the marketplace dynamics of the technologies that make up the domain, or if the domain is conducting research for an on-going project or conformance review. The team should determine what the refresh cycle should be for the domain and the team leader should ensure that this is adhered to. Research for the ARB, gap analysis and domain architecture updating is triggered by those events.

Who does the research?
Research into trends and changes in technology should be undertaken by all domain team members. Research on specific topics, or membership on subcommittees, will be assigned by the domain team leader.

What sources should be used for research?
A variety of sources is available to domain team members. Team members, in all likelihood, have specific publication **web sites** that they visit on a regular basis. Most manufactures and most publishers of software have product web sites, as do standards bodies. In addition, the State has two consulting organizations under contract: Gartner Group and META Group.(Note: As of July 2001, the State was renegotiating these contracts).

Gartner Group -Gartner Group provides research material to senior management on a regular basis. Team members interested in seeing this material should contact their team leaders. ITAD plans to consolidate these materials in a library, as well. Specific questions for Gartner Group should be directed to ITAD. The Gartner Group web site is http://www4.gartner.com/init.

META Group - META Group produces a variety of reports ranging from 1-3 pages (called Deltas and META Faxes), on up to 20 or more pages (META Briefings and META Practices). Conference proceedings and teleconference proceedings are also available. All of these materials are available on the META Group portal web site at http://clients.metagroup.com. Team members should register for access to the META Group portal. The portal also has daily topics (METAbits), audio briefings, presentations and other research materials. Members can set up research profiles to help focus their efforts.

The Research Process

The research process for domain member research or for internal team activities has no formal structure. The only requirements are for documentation of the research (see below). The process for research conducted for domain architecture changes that require the approval of the ARB is more highly structured. A complete explanation can be found in EWTA Update Process Workflows (above).

Initial Steps in Structured Research

The formal change process starts with a decision to affect a significant change in the domain architecture (see above). After consulting with the domain team, the team leader prepares a DOIT-EWTA form DT-1 Action Plan for a Domain Architecture Update requiring Architecture Review Board Approval. A template for this can be found in Appendix 2. By this point in time, the domain team should have determined the degree of effort required and whether or not hands-on research will be required.

After a QA review, ITAD will coordinate with the EPMO for any resources that might be needed and for potential impact on DOIT or agency projects. ITAD handles the coordination with other domains that are impacted by the anticipated change to the domain architecture. ITAD will also maintain the involvement of other domain teams in the review process. Following a short commentary period for the other domain teams, ITAD coordinates the reviews and communicates those results to all involved domain team leaders. At this point, the domain team will update the action plan as needed, following which ITAD will forward the DT-1 to the CTO for a review of resource requirements. ITAD will work with the domain team to resolves any problems with the scope of the research as identified by the CTO. Once the CTO has approved the use of the identified resources, the domain team leader assembles a subcommittee and appoints a chair. Subcommittees may be a small as one or two people, or as large as needed. Subcommittee members are generally from inside the domain team, unless a non-member is needed because they are a subject matter expert, or because the topic has cross-domain impacts.

The subcommittee is responsible for conducting any research and evaluations outlined in the action plan. Following the conclusion of the research and evaluation, the subcommittee prepares a preliminary report and recommendation (the DOIT-EWTA form DT-2 Recommendation for Change by Subcommittee / Full Domain Team) and submits it to the entire domain team for review and comment. Once a final version has been accepted by the domain team, the team leader forwards the DT-2 to ITAD for a QA review and for a peer review by the other domain team leaders. The team leader adjusts the DT-2 and proceeds to the next steps in the process. The nature of these next steps depends on whether or not hand-so research or proof of concept is needed. The reader is directed to the EWTA Update Process Workflows (above) for more information.

Outcomes From Research

Category of Change

- Creating new principles, standards or product standards.

- Moving a standard or product standard between categories, (e.g., From *research* to *strategic,* from *strategic* to *transitional* or from *transitional* to *obsolete)*.
- Editing or modifying principles.
- Updating the version of an existing strategic standard or product standard.
- Adding a new technology category to the domain architecture.

Documentation Requirements

Form DT-6 Monthly Status Report from a Domain Team

Form DT-1 Action Plan for a Domain Architecture Update requiring Architecture Review Board Approval

Form DT-2 Recommendation for Change by Subcommittee / Full Domain Team.

Section 6 – Relating Domain Architecture to Infrastructure

A major characteristic of an adaptive infrastructure is increasing reuse of technology assets. However, an adaptive infrastructure does not begin with implementing software, networks, and hardware; it begins with an adaptive, Enterprise-Wide Technology Architecture (EWTA) to provide engineering guidance.

Role of Domain Architectures and Infrastructure

The primary role of a domain architecture is to organize technologies and their usage rules to assist architects in identifying common uses of technologies, and to eliminate as much redundancy as possible. This is essential to providing reusable infrastructure technology across the enterprise. The distinction between domain architectures and infrastructure patterns is in the way they are used. One is an architecture aid, used to drive the identification, selection, and implementation of technologies in standard configurations; the other is an engineering aid used to guide the identification and implementation of standard infrastructure services across the appropriate business patterns.

Relationship of Domain Architectures to Infrastructure

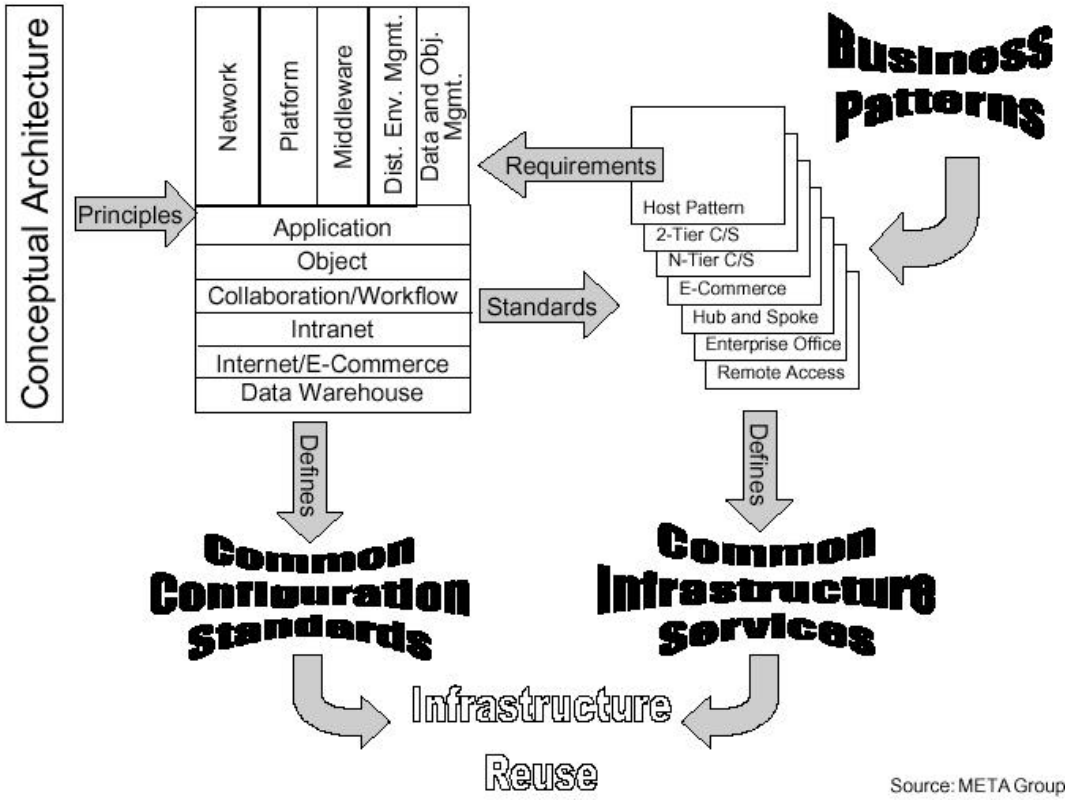
The relationship between domain architectures and infrastructure is bi-directional. To define the domain architectures, architects must know what types of services the business requires so the requisite technology standards are defined. Likewise, to design and implement the reusable infrastructure access services, infrastructure developers must know which technology standards and principles have been defined within the domain architectures (see Figure 6 below). Also, there is a great amount of overlap in the content of each. For instance, platform domain architecture is likely to define the mainframe, midrange, and workgroup server, as well as the desktop hardware/operating system vendors and products.

Issues Involving Infrastructure Development

The principles and standards of domain architectures are defined by taking into account the need to optimize technology across the enterprise, including across different infrastructure patterns and domain architectures. An explicit implication of this practice is that the best technology for a specific pattern usage may not be chosen.

The primary role of an infrastructure pattern is to speed the identification, configuration, and implementation of technologies by defining a proven set of technology services enabling a particular style of solution delivery. These services represent the reusable interfaces for applications to access the reusable infrastructure technology defined in domain architectures. Examples include security access services, middleware connectivity services, enterprise directory services, and common data access services. It is interesting to note the majority of services required are not new to most project teams. The difference is that in an adaptive environment, these services are not built by project teams for the use of one or two applications, but by an infrastructure development group for use across as many applications as possible.

Figure 1 Domain Architecture and Infrastructure Interdependency



Section 7 – Conducting Architecture Conformance Reviews

> *Ideally, architecture guides all IT decision making (infrastructure application development, operations, etc.)*

As awareness of the need for architectural conformance becomes second nature, the domain architectures will provide guidance for many day-to-day IT activities. For example:

- IT procurements and contract requirements
- Buy-versus-build decisions
- Setting evaluation criteria in RFPs and SOWs
- Upgrading hardware and infrastructure
- Software package or tool selection
- Design decisions in the context of a specific IT project or application system

Therefore, from time to time, domain teams are expected to participate in architecture conformance reviews of Requests for Proposals (RFP), vendor responses to RFPs, agency IT architectures and agency IT projects. This can be accomplished as a team effort, or as a subcommittee effort. The reviews assess and evaluate conformance of projects or proposals to EWTA conceptual principles, and domain principles, standards and guidelines.

How to Conduct a Conformance Review

Existing domain architecture documents serve as a basis for the reviews. The reviews evaluate conformance to EWTA conceptual principles, domain architecture principles, technical and product standards, and best practices.

Process for Architecture Conformance Reviews by Domain Teams

Domain team conformance reviews are to result in the domain team leader submitting to the IT Architecture Division, ITAD, a report with any necessary questions, items for clarification and/or requests with specific RFP section references. It is the responsibility of the ITAD to roll up the conformance review to the level of the Conceptual Architectural Principles and complete the final report that is submitted to the RFP evaluation team.

Documentation Requirements

Formal documentation formats have not yet been defined for architecture conformance reviews because of the variations in the size and complexity of the system proposals that have been reviewed to date. Also there is no standard format for an architecture section in RFPs. Until specific architecture conformance requirements become routine components of RFPs, there will be a need for clarifications from vendors regarding specific products, design decisions and other implementation recommendations. This is assembled as a combined list of questions from the domain team leaders with reference to specific sections and content of the documentation submitted by a vendor as part of its proposal. The IT Architecture Division provides specific guidance to the domain team leaders as to the approach and content of review deliverables. In general our philosophy is to identify what is good about a proposal as well as what aspects of the

proposal do not conform to the architectural elements that define the ideal system. To date we have found this approach more useful to RFP evaluation committees and project teams.

Appendix 1 – Glossary of Terms and Abbreviations

Explanation of Abbreviations

ARB	Architecture Review Board
BITSB	Business and Information Technology Strategy Board (also abbreviated as B&ITSB)
CIO	Chief Information Officer
CTO	Chief Technology Officer
DOIT	Department of Information Technology
DT	Domain Team
DTSC	Domain Team Sub Committee
EAP	Enterprise Architecture Planning
EPMO	Enterprise Program Management Office (sometimes called the EPMO)
EWTA	Enterprise-Wide Technical Architecture
ITAD	Information Technology Architecture Division
POAA	Proof of Architecture Assessment
RFP	Request for Proposal
SOW	Statement of Work

Appendix 2 – Deliverables (Templates) for Domain Team Activities

Form DT-1 Action Plan for Domain Team Research
Form DT-2 Recommendation for Change by Subcommittee/Full Domain Team
Form DT-2B Post Hands-on Evaluation Report and Recommendation
Form DT-3 Hands-on Project Plan Template
Form DT-4 Gap Analysis Report from a Domain Team
Form DT-5 Proof of Architecture Assessment Project Plan Template
Form DT-5B Post Proof of Architecture Assessment Report and Recommendation
Form DT-6 Monthly Status Report from a Domain Team
Form ARB-1 Architecture Review Board Rejection of Request for Domain Architecture Change
Other Materials

Form DT-1 Action Plan for Domain Team Research

(Required for all Domain Architecture Updates requiring Architecture Review Board Approval)

Basic Information

Submittal Date:
Domain Team:
Team Leader:
Contact Information (Ph, email):

Scope of the Change

DESCRIPTION
Provide a description of the change that will result from the proposed research:

PRIORITY AND TIME FRAME
What is the priority of this research? When do you anticipate making the change?

ARCHITECTURAL IMPACT
What is the impact on domain architecture and EWTA? Please check off the reason for requesting the research. If there is more than one reason for requesting the research, check all that apply. (copy this ☑ and paste over the box)

- ☐ Adding or removing principles, technical standards, or product standards
- ☐ Adopting methods that become mandatory or are embodied in products that are categorized as strategic
- ☐ Significantly altering the meaning or intent of a principle, technical standard or product standard
- ☐ Changing the status of a product, i.e., from research to strategic, from strategic to transitional, from transitional to obsolete
- ☐ Making any change that will have major impact on technology products, agency financial or personnel resources, or on the ability of an agency to implement application systems
- ☐ Requiring modification of a pending RFP (SOW etc) or an RFP currently out for bid
- ☐ Requiring changes to ongoing implementation projects
- ☐ Greatly accelerating the agencies' transition planning for implementing a new architecture

☐ Other:

What is the impact on other domains (if any)?

FINANCIAL IMPACT
What is the estimated financial impact of this change request? (Include TCO analysis when possible):

Need or Justification (may be more than one)

Please check off the reason for requesting the research and then provide a brief description. If there are more than one reason for requesting the research, describe the reasons in decreasing order of importance. (copy this ☑ and paste over the box)

- ☐ Domain team reviews of technology in the marketplace and technology trends
- ☐ Domain team gap analysis activities
- ☐ Changes to the conceptual architecture
- ☐ Agency project – Architecture consultation
- ☐ DOIT and multi-agency infrastructure activities
- ☐ Agency EWTA exception process
- ☐ Infrastructure implementation or proposed DOIT service offering
- ☐ Assigned research other than research for the exception process
- ☐ Other (please specify):

Scope of Work Needed to Perform the Research

TYPE OF RESEARCH
Please check off the type of research and then provide a brief description. If there is more than one type of research, describe types in decreasing order of importance. (copy this ☑ and paste over the box)

- ☐ Web or paper research
- ☐ Use of consultant services
- ☐ Agency experiences
- ☐ Hands-on evaluation
- ☐ Other (please specify):

Please provide a description of the research to be conducted:

TIME ESTIMATES
Provide an estimated time to complete research (work hours, start/end dates):

If hands-on research has been indicated above, describe the general scope of this research.
Note: *Staffing and other resources should be included in the work plan below*

Basic Work Plan

The intent of this section is to provide the CTO and the ARB with enough information to reach a decision in support of the hands-on evaluation.

Provide a basic description of the work plan for conducting the research needed to support this change request. Indicate major activities and milestones.

List the proposed assignments to subcommittee:

Chair for subcommittee:
Domain team members:
Team members from other domains:
Agency staff:

Briefly describe what other resources will be needed, other than staffing? Indicate total costs (if any).

Evaluation Criteria to be Used

Describe the evaluation criteria to be used.

What Alternative Products or Standards Will be Considered (if appropriate)?

Describe alternative products or standards.

Information Sources

Please check off the information sources used and provide a brief description for each source, including specific names as appropriate. (copy this ☑ and paste over the box)

- ☐ IT research and advisory services
- ☐ Publications from national or international standards bodies
- ☐ Publications from industry consortia
- ☐ Information provided by manufacturer or software publisher
- ☐ Other (please describe below):

Descriptions/names as appropriate:

Additional Comments

Please use this space for any additional comments:

Form DT-2 Recommendation for Change by Subcommittee/Full Domain Team

Basic Information

Date of Approval of DT-1:
Submittal Date:
Domain Team:
Team Leader:
Contact Information (Ph, email):

Scope of the Change

Note: *This information should be copied from the approved DT-1*

DESCRIPTION
Provide a description of the change proposed, including the exact text of proposed or modified principle, version number, or standard numbers, etc.:

PRIORITY AND TIME FRAME
What is the priority of this change request? When do you anticipate making the change?

ARCHITECTURAL IMPACT
What is the impact on domain architecture and EWTA? What is the impact on other domains (if any)?

FINANCIAL IMPACT
What is the estimated financial impact of this change request? (Include TCO analysis when possible)?

Need or Justification (may be more than one)

Note: *This information should be copied from the approved DT-1*

Please check off the reason for requesting the change and provide a brief description. If there are more than one reason for requesting the change, describe the reasons in decreasing order of importance. (copy this ☑ and paste over the box)

- ☐ Domain team technology tracking activities
- ☐ Domain team gap analysis activities
- ☐ Agency project – Architecture consultation
- ☐ Agency EWTA exception process
- ☐ Strategic planning and business planning (business drivers, RTA's, etc.)
- ☐ Infrastructure implementation or proposed DOIT service offering
- ☐ Changes to State or agency application portfolio(s)
- ☐ Other (please specify):

Summary of Research Performed

Note: *This information should be copied from the approved DT-1*

TYPE OF RESEARCH
Please summarize the approach used to conduct the research (e.g. web or paper research, use of consultant services, agency experiences, hands-on research.)

SCOPE OF THE RESEARCH
Please describe the scope of the research. Indicate team members in this description.

What alternative standards or products were considered?

Outcomes Based on Evaluation Criteria

EVALUATION CRITERIA
Describe the evaluation criteria used.

Note: *This information should be copied from the approved DT-1*

RESULTS
Describe the results of the evaluation. If more than one standard or product was included in the evaluation, provide comparative results.

Recommendation(s)

Please choose the appropriate recommendation and provide details or justifications as required. (copy this ☑ and paste over the box)

☐ **YES – Change the domain architecture and associated documents**
Provide the exact text of the proposed change:

Domain architecture principles:

Standards and/or product standards tables:

Domain architecture best practices/guidelines:

☐ **YES – But need to conduct a hands-on evaluation prior to final decision**
Provide the following information.

Additional justification for hands-on research:

Note: *The following should be attached, or provided at bottom of form in a section titled: Supplemental Materials for Hands-on Evaluation.*
Revised scope of proposed research project
High level work plan (simple Gantt, etc.)
Initial resource requirements (staff, dollars, product, facility, etc.)

☐ **NO – Take no action at this time, consider in the future, etc.**
Please select a reason and provide a brief explanation for that choice. (copy this ☑ and paste over the box)

☐ High risk, immature – continue tracking
Explanation:

- ☐ Needs more "paper" evaluation
  Explanation:

- ☐ Inconclusive results of comparative evaluation
  Explanation:

- ☐ Inappropriate or negative evaluation
  Explanation:

- ☐ Other
  Specify:

Impact Assessment

Describe the impacts on the following areas should the recommended changes be implemented (use all that are appropriate).
Note: *This information should be copied from the approved DT-1 and modified as needed.*

Infrastructure (patterns, components, services)

Impacts on other domain architectures

Existing or proposed projects, RFPs, SOWs, transition planning, etc.

Financial (might include TCO)

Next Steps

Use this space to describe any next steps or following action needed.

Additional Comments

Use this space for any additional comments.

Supplemental Materials for Hands-on Evaluation

DESCRIPTION OF THE RESEARCH
Please describe the hands-on research to be conducted.
Note: *Staffing and other resources should be included in the work plan below.*

TIME ESTIMATES
Provide an estimated time to complete research (work hours, start/end dates).

BASIC WORK PLAN
The intent of this section is to provide the CTO and the ARB with enough information to reach a decision in support of the hands-on evaluation.

Provide a basic description of the work plan for conducting the research needed to support this change request; indicate major activities and milestones. A simple Gantt chart would be helpful.

List the proposed assignments to subcommittee to conduct the hands-on research (indicate if same or new):

Chair for subcommittee:
Domain team members:
Team members from other domains:
Agency staff:

Describe what other resources will be needed, other than staffing. Indicate any costs.

EVALUATION CRITERIA TO BE USED
Describe the evaluation criteria to be used.

Form DT-2B Post Hands-on Evaluation Report and Recommendation

Basic Information

Submittal Date:
Domain Team:
Team Leader:
Contact Information (Ph, email):

Research Project

Indicate which research project this report is for:

Outcomes Based on Evaluation Criteria

EVALUATION CRITERIA
Describe the evaluation criteria used.
Note: *This information should be copied from the approved DT-1 or DT-2.*

RESULTS
Describe the results of the evaluation. If more than one standard or product was included in the evaluation, provide comparative results.

Recommendation(s)

Please choose the appropriate recommendation and provide details or justifications as required. (copy this ☑ and paste over the box)

☐ **YES – Change the domain architecture and associated documents**
Provide the exact text of the proposed change:

Domain architecture principles:

Standards and/or product standards tables:

Domain architecture best practices/guidelines:

☐ **YES – But need to conduct a proof of architecture assessment prior to final decision**
If this is the recommendation of the research team, then a Proof of Architecture Assessment Work Plan (DT-5) must be completed and submitted along with this recommendation form.

☐ **NO – Take no action at this time, consider in the future, etc.**
Please select a reason and provide a brief explanation for that choice. (copy this ☑ and paste over the box)

- ☐ High risk, immature – continue tracking
  Explanation:
- ☐ Needs more "paper" evaluation
  Explanation:
- ☐ Inconclusive results of comparative evaluation
  Explanation:
- ☐ Inappropriate or negative evaluation
  Explanation:
- ☐ Other
  Specify:

Impact Assessment

Describe the impacts on the following areas should the recommended changes be implemented (use all that are appropriate).
Note: *This information should be copied from the approved DT-1 or DT-2 and modified as needed.*

Infrastructure (patterns, components, services)

Impacts on other domain architectures

Existing or proposed projects, RFPs, SOWs, transition planning, etc.

Financial (might include TCO)

Next Steps

Use this space to describe any next steps or following action needed, other than a Proof of Architecture Assessment.

Additional Comments

Use this space for any additional comments.

Form DT-3 Hands-on Project Plan Template

Basic Information

Date of Approval of DT-1:
Submittal Date:
Domain Team:
Team Leader:
Contact Information (Ph, email):

Justification

SCOPE OF CHANGE TO DOMAIN ARCHITECTURE
Indicate what change to the domain architecture is supported by this research.
Note: *Can be copied from DT-1 or DT-2.*

PURPOSE OF THE RESEARCH
Briefly, describe why this hands-on research is needed.

SCOPE OF THE RESEARCH
Please describe the hands-on research to be conducted.
Note: *Staffing and other resources should be included in the work plan below.*

TIME ESTIMATES
Provide an estimated time to complete research (work hours, start/end dates)

Work Plan

PROJECT PLAN
Provide a basic description of the work plan for conducting the research needed to support this change request; indicate major activities and milestones. A detailed Gantt chart with resource assignments, milestones and deliverable dates must be attached (this can be in the form of an MS Project file along with a print-out)

COMMITTEE ASSIGNMENTS
List the proposed assignments to subcommittee to conduct the hands-on research (indicate if same or new):

Chair for subcommittee:
Domain team members:
Team members from other domains:
Agency staff:

TRAINING
Describe any training that will be required by the evaluation team members. Include method, duration, and location of training. The cost of training should be included in the resources section below.

RESOURCES
Describe what other resources will be needed, other than staffing. Itemize the individual costs, including training costs, here. Examples of resources include facilities, consulting services, and equipment or software acquisition.

Evaluation Criteria to be Used

Describe the evaluation criteria to be used.

Form DT-4 Gap Analysis Report from a Domain Team

Note: *This is an Excel spreadsheet format*

Basic Information

Meeting Date and Time:
Domain Team:
Team Leader:
Members attending meeting:

Instructions

Column A	Planning Category	attempt to group similar gap items that could be incorporated in the same (future) plan
Column B	Gap Description	brief description of the gap item (or a label)
Column C	Priority	relative priority within the domain for resolving the gap item; ranked from A highest, to C lowest
Column D	Cross Reference	list of other gap items that are related to this gap item, based on the gaps identified in the domain architecture document
Column E	Short List?	gap items to be acted upon first (low hanging fruit, most impact, etc.)
Column F	Order	used to order the short list and remaining gaps as part of the planning process
Column G	Domain Principles Supported	list of domain principles supported by resolving the gap
Column H	Comment/Action Item	indicate how the gap will be resolved, and any other comments that are relevant; this cell can include historical actions
Column I	Skills	skills required as an aid to resource planning and assignment of team members to activities or research

Basic Information

This example is based on a Gap Analysis Report from the Application Development Domain.

Planning Category	GAP	Prio.	xref	Short List?	Order	Domain Principles Supported	Comment/Action Item (from May meeting)	Skills Required
Merge as single GAP.	Web-based enterprise reporting tools	A	5	X		Anytime/Anywhere Access	Select tool based on EWTA principles and standards. Style Report and Crystal Reports in use.	Reporting and web development experience.
	Reporting Tool Standard for legacy systems	A	6				Agency Suggestion. Roll into Web-based reporting - recommend Web for legacy reporting.	
Move to eGov.	GUI front-end tools for legacy systems	X	8				Agency Suggestion. Recommend moving to "Web enable legacy systems" in eGOV domain.	
Document Update	Evaluation of 2nd tier baseline technologies (e.g. Oracle tools)	A		X		Reduce Integration Complexity	Gap in original assessment (Include disposition of all "research" items)	Development experience/research.
Document Update	Consider OO Cobol as a strategic language	C	9			Reduce Integration Complexity	Agency Suggestion.	
skills required as an aide to resource planning	Research VA Generator, VA Business Rules	c				Reduce Integration Complexity	Re-evaluate as part of document review.	Advanced developer, research.

Form DT-5 Proof of Architecture Assessment Project Plan Template

Basic Information

Date of Approval of DT-1:
Submittal Date:
Domain Team:
Team Leader:
Contact Information (Ph, email):

Additional Justification

Briefly, describe why this proof of architecture assessment research is needed. This description should go beyond that of the DT-1 or DT-2B and should include information on the following.

a. Immediate or near-term business need at agency or multi-agency level (might be part of the EWTA Exception Process)

b. Proposed as a service offering or architecture component.

c. Clearly identified business drivers or RTAs with immediate strategic impact.

Scope of the Research

DESCRIPTION OF THE RESEARCH
Please describe the research to be conducted. Include the product or products to be evaluated.
Note: *Staffing and other resources should be included in the work plan below.*

TIME ESTIMATES
Provide an estimated time to complete research (work hours, start/end dates)

PARTICIPATING AGENCIES
Provide name(s) and contact(s) at the agencies that will be involved in this proof of architectural assessment.

Work Plan

PROJECT PLAN
Provide a basic description of the work plan for conducting the research needed to support this change request; indicate major activities and milestones. A detailed Gantt chart with resource assignments, milestones and deliverable dates must be attached (this can be in the form of an MS Project file along with a print-out)

COMMITTEE ASSIGNMENTS
List the proposed assignments to subcommittee to conduct the hands-on research (indicate if same or new):

Chair for subcommittee:
Domain team members:
Team members from other domains:
Agency staff:

TRAINING
Describe any training that will be required by the evaluation team members or agency staff. Include method, duration, and location of training. The cost of training should be included in the resources section below.

RESOURCES
Describe what other resources will be needed, other than staffing. Itemize the individual costs, including training costs, here. Examples of resources include facilities, consulting services, and equipment or software acquisition.

FUNDING
Describe what sources and amounts of funding will be available, including agency funds.

Evaluation Criteria to be Used

Describe the evaluation criteria to be used.

Form DT-5B Post Proof of Architecture Assessment Report and Recommendation

Basic Information

Submittal Date:
Domain Team:
Team Leader:
Contact Information (Ph, email):

Proof of Architecture Assessment Project

Indicate which proof of architecture assessment project this report is for:

Outcomes Based on Evaluation Criteria

EVALUATION CRITERIA

Describe the evaluation criteria used.

Note: *This information should be copied from the approved DT-1 or DT-2.*

RESULTS

Describe the results of the evaluation. If more than one standard or product was included in the evaluation, provide comparative results.

Recommendation(s)

Please choose the appropriate recommendation and provide details or justifications as required. (copy this ☑ and paste over the box)

☐ **YES – Change the domain architecture and associated documents**
Provide the exact text of the proposed change:

Domain architecture principles:

Standards and/or product standards tables:

Domain architecture best practices/guidelines:

The following are optional recommendations that would be in addition to the above.

Add as a service or component offering (describe):

Proceed to full deployment or production mode at the agency or agencies participating in project.

☐ **NO – Take no action at this time, consider in the future, etc.**
Please select a reason and provide a brief explanation for that choice. (copy this ☑ and paste over the box)

- ☐ High risk, immature – continue tracking
  Explanation:
- ☐ Inconclusive results of comparative evaluation
  Explanation:
- ☐ Inappropriate or negative evaluation
  Explanation:
- ☐ Other
  Specify:

Impact Assessment

Describe the impacts on the following areas should the recommended changes be implemented (use all that are appropriate).
Note: *This information should be copied from the approved DT-1 or DT-2 and modified as needed.*

Infrastructure (patterns, components, services)

Impacts on other domain architectures

Existing or proposed projects, RFPs, SOWs, transition planning, etc.

Financial (might include TCO)

Next Steps

Use this space to describe any next steps or following action needed.

Additional Comments

Use this space for any additional comments.

Form DT-6 Monthly Status Report from a Domain Team

Basic Information

Meeting Date and Time:
Domain Team:
Team Leader:
Members attending meeting:

Details

Adapt as needed, but these should be probable items:

- member reports on on-going research
- subcommittee status reports (if any)
- TBD (use as needed)
- action items
- new business

RESULTS OF ON-GOING RESEARCH
Briefly, describe results and recommendations from on-going research.

SUBCOMMITTEE STATUS REPORTS
Briefly, describe status of any subcommittee activities.

TBD
Use this space to report on other team matters, research, evaluations, progress, etc.

ACTION ITEMS
Use this space to report on items needing resolution, next steps needed, etc.

COMMENTS

Use this space for any comments, suggestions, etc.

ARB-1 Architecture Review Board Rejection of Request for Domain Architecture Change

Basic Information

Date of Rejection of DT-1 or DT-2:
Domain Team:
Team Leader:

Scope of Rejection

DESCRIPTION
Provide a description of the change proposed, include the exact text of proposed or modified principle, version number or standard numbers, etc.
Note: *Copy from DT-1 or DT-2*

NATURE OF REJECTION
Provide a description of the rejection. If a partial or conditional rejection, please be clear as to which part of the change request is rejected, or what the conditions are.

RECOMMENDED NEXT STEPS
Please indicate what the domain team should do for the follow-up activities (if any).

Other Materials

EPMO-1 EPMO Resource Review

Availability of resources
Relative priority
Scheduling time frame

Update and Publish Targets

EWTA DOMAIN DOCUMENTS

- Technical standards
- Product standards
- Best practices
- Configurations (optional)

EAP DOCUMENTS

- Infrastructure patterns and components
- Application Portfolio
- IT policies

PROCUREMENT DOCUMENTS

- RFP and SOW specifications and “boiler plate”
- ***Optionally*** amendments to existing RFPs and SOWs
- ***Optionally*** existing contracts or contract under negotiation

Appendix 3 – Descriptions of the Technical Domains

The nine technical domains created by the Architecture Team were classified as either basic technology or application domains.

Basic Technology Domains

These architectures cover the commonly used technologies that almost every information system or utility depends on. Typically these include network, computer hardware, operating systems and other systems software, middleware, database management systems, distributed environment management tools. We have added data warehouse (typically an applied technology domain) by combining it with the data management domain.

Domain	Description	Technology Categories
Network	Network architecture provides for all aspects of the communications infrastructure for a distributed computing environment. This includes logical elements, physical hardware components, carrier services and protocols. The scope of the architecture includes voice, data, and video and directory services.	Wiring, hubs, routers, LAN switches, ATM switches, Frame Relay switches, network operating systems, carrier services, LAN / WAN protocols, directory services.
Distributed Environment Management	This architecture defines how the hardware and software components of the environment will be controlled. It focuses on issues of configuration management, fault detection/isolation, testing, performance measurement, problem reporting, software upgrades/control, and remote systems management.	Networks and systems management, LAN management, software distribution, storage management, asset management, help desk, security, performance management, capacity planning, change control.
Middleware	The middleware architecture defines the components that create an integration environment between clients and the legacy and server environments. Middleware sites between the application and network communication mechanisms, and provides for application integration independent of network and platform technologies.	Messaging oriented middleware, object request brokers, transaction processing monitors, database gateways.

Domain	Description	Technology Categories
Platform	The Platform architecture defines the technical computing components of the infrastructure including client/server hardware platforms, operating systems, database engines and environments, and interfaces.	Workstations, client software, groupware servers, midrange boxes and mainframes, operating systems, and OLTP and OLAP database management systems.
Data Management and Data Warehouse	This architecture defines the mechanics for managing, securing, and maintaining the integrity of an enterprise's significant logical entities, and specifies standards for accessing business data. Also describes the internally consistent logical structure of authoritative databases and provides the standards for decision support and OLAP data.	Data repositories, data modeling tools, data replication tools, data administration tools, data extraction tools, OLAP tools, multidimensional databases, etc.
Security	The security architecture facilitates appropriate access to information while ensuring integrity and availability. It supports innovative business process as well as compliance with all government regulations and standards related to information security. It is concerned with is identification, authentication and access rights. Other aspects of security architecture include virus protection, intrusion prevention and privacy.	Digital certificates, intrusion detection systems, Public Key Infrastructures, encryption, administrative tools, firewalls, directory services, access lists and methods, anti-virus tools, etc.

Applied Technology Domains

These architectures are more specific to the way in which technology is being applied to support the business.

Domains	Description	Technology Categories
Application Development	Application architecture is the focal point of an organization's systems inventory. It defines how applications are designed and constructed, how they communicate and cooperate, and where they reside. A subset of this architecture is the object architecture, which defines the internally consistent set of relationships between business relevant entities; it defines how real-world things interact, and defines the expected behaviors of each object.	Application development tools, 3GLs and 4GLs, languages, web development and authoring tools, repositories, ERP applications, project management, CASE tools, testing tools, object development tools, object repositories.
WEB / E-Government	Web / E-Government architecture defines the technologies, standards and guidelines that relate to web based universal access for employees, customers and partners to business information and applications. It covers web based business to business, business to customer, and employee to agency, and inter- and intra-agency transactions. This architecture addresses user interfaces, electronic commerce, digital government, database connectivity and business logic, e-forms processing, etc.	Electronic commerce (procurement, payment, EDI), Web browser, intranet servers (mail, web, news, proxy), PKI, web portals, forms processing, middleware, content management, database connectivity, development and authoring tools, search engines, etc.

Domains	Description	Technology Categories
Collaborative / Workflow	The collaborative and workflow architecture defines the environment for facilitating and automating business processing and content management. It addresses the rules, behaviors of conversation focused business behavior, and the rules and practices of activity focused business behavior.	Collaborative tools, workflow, middleware, groupware tools, E-Mail, document management, imaging, content management, videoconferencing, middleware, etc.

Appendix 5 – Roles and Responsibilities

Business and IT Strategy Board

The Business and IT Strategy Board exists to ensure the alignment of IT with the business requirements of the State and its agencies. This group verifies the Common Requirements Vision and approves the Conceptual Architecture Principles of the EWTA. The board works with the Architecture Team to keep the Requirements for Technical Architecture and the Conceptual Architecture Principles current with the business needs of the State. They provide important advice and support for new statewide IT initiatives and policies, as well as adjudicate final appeals for exceptions to architecture standards.

Responsibilities include:

- Work closely with the Architecture team to provide input on business drivers and their subsequent decomposition into Requirements for Technical Architecture (RTAs).
- Approve the Common Requirements Vision and the Conceptual Architecture.
- Charter the Architecture Review Board (ARB) and authorize them to approve certain lower level EWTA deliverables, specifically the domain architecture documents, and to deny/approve/escalate exceptions to the EWTA standards. Note: the Strategy Board is the final "court of appeal" for exception requests.
- Charter the Enterprise Program Management Office (EPMO) to manage resources associated with (but not limited to) architecture development or infrastructure projects on behalf of the Strategy Board or ARB.
- Recommend to the CIO IT policies for adoption.

Architecture Review Board

The Architecture Review Board (ARB) is responsible for the promotion, approval and enforcement of the technical standards. Its membership is made up of senior IT and agency personnel. The ARB approves domain team deliverables (i.e., technical standards, design principles, product standards, best practices, and standardized configurations) and adjudicates appeals for exceptions to architecture standards. The Architecture Review Board (ARB) role is to promote, approve and enforce the technical standards. Its membership is made up of senior IT and agency personnel, and is chaired by the DOIT Chief Technology Officer.

Responsibilities include:

- Maintaining the EWTA process discipline and sponsoring new and revised standards.
- Approving domain team deliverables that impact agencies (i.e. technical standards. design principles, product standards, best practices and standardized configurations).
- Adjudicating appeals for exceptions to architecture standards.
- Reviewing domain and architecture team initiatives and recommend priorities.
- Reviewing possible infrastructure impacts of planned projects.
- Utilizing EWTA teams as a resource in understanding domain deliverables.

Enterprise Architecture Team

The architecture team translates the agencies' requirements into a business driven IT direction. This team is made up of the members of the Architecture Division, senior technical management from DOIT, and senior business management from agencies who are familiar with the use of IT to solve business problems. This important team develops and updates the Common Requirement Vision and Conceptual Architecture Principles that document the business needs of the State for the technical architecture. This team is usually assembled when a new iteration of the common requirements and conceptual architecture is needed. Between iterations, the DOIT Architecture Division covers the responsibilities of this team.

Responsibilities include:

- Development of the common requirement vision and conceptual architecture required for EWTA.
- Assure that that technical domain teams are organized and sized correctly and the technology components are assigned to the appropriate domain team.
- Charter and oversee domain team activities.
- Consolidate and identify additional initiatives from domain teams to fill domain gaps.

Technical Domain Teams

The technical domain teams provide the knowledge and expertise required to develop the technical architectures and standards for the enterprise architecture process. Each team consists of technical experts from throughout the State. These teams are responsible for the development and maintenance of the Domain Architecture Documents, including the domain specific deliverables (i.e. design principles, technical standards, product standards, standard configurations, and best practices). The teams are expected to keep abreast of new technology and make recommendations on new technology to close gaps in the current environment.

DOIT Architecture Division

The DOIT Architecture Division coordinates the EWTA process and it's associated activities. The division is responsible for coordinating all technical domain team activities as well as communications and web site content. They also provide the function of the EWTA Architecture Team in between iterations of the Business Vision and Conceptual Architecture.

Responsibilities include:

- Ongoing enhancement, communication and governance of EWTA and EAS.
- Coordination of activities and deliverables between domain teams.
- Coordination and QA of deliverables and presentations to ARB.
- Provide staff support to ARB and the Business and IT Strategy Board.
- Coordinating publication of domain architecture documents.
- Coordinating use of research services.

Enterprise Program Management Office (EPMO)

The PMO exists at the enterprise level to coordinate and track: IT projects, schedules, and the architecture compliance process. DOIT personnel staff this office

Responsibilities include:

- Act as the facilitator for an architecture assurance function at the project level)
- Create / update the projects portfolio.
- Manage the projects portfolio
  - Provide the strategy board and DOIT management with project scheduling recommendations.
  - Coordinate the enterprise resource management and scheduling information.
  - Track and coordinate interdependencies among projects.
  - Monitor, report and communicate significant changes to projects.
  - Provide project management for DOIT initiated enterprise-wide projects
- Track the progress and completion of projects.
- Coordinate the architecture compliance process to ensure that the integrity of the architecture is maintained as systems and infrastructure are acquired, developed and enhanced.